3.0 DESCRIPTION OF POTENTIAL SOURCES OF POLLUTION

A tentative listing of chemicals used at the Big Sandy Energy Project is provided in **Table 1.** If this list of chemicals changes, the ADEQ will be notified prior to plant startup. This table provides a list of the (Chemical Abstract Service) CAS number and maximum quantity of chemicals which may be used at the facility. The location of these chemicals will be supplied to the ADEQ prior to start-up of the facility. All of these chemicals are stored in the main plant area. The main plant area is covered with asphalt and concrete at buildings and road locations. The remaining areas in the main plant area are covered with rock. Storm water runoff in this main plant area is directed to the membrane lined evaporation ponds.

Preliminary information concerning the use of chemicals and types of control mechanisms for the location of these chemicals are provided in the following discussion. This information will be updated and the ADEQ notified prior to start-up of the Project.

3.1 Aqueous Ammonia

Aqueous ammonia (Location 1) is used at the facility in the selective catalytic reducer unit for the control of air emissions resulting from the combustion of natural gas. The concentration of anhydrous ammonia in the aqueous ammonia solution can vary from about 19 to 30 percent. Aqueous ammonia is used on a continuous basis at the facility.

The aqueous ammonia is stored in two 10,000 gallon tanks. These tanks are equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tanks are equipped with secondary containment. The piping from the tanks is doubled-walled at key exposed locations outside of containment areas.

The secondary containment system around this tank is approximately 4 feet high by 28 feet long by 15 feet wide. This area is capable of storing approximately 12,500 gallons or 125 percent of the maximum volume in one tank. The containment system is made of reinforced concrete to contain rainwater. The containment system will be equipped with a manually operated valve outside of the containment area which is kept in the closed position or manually pumped. Prior to removing liquids in the containment area, the liquid will be tested for the presence of ammonia. If the test is negative, the water will be removed from the secondary containment system.

TABLE 1
VARIOUS CHEMICALS USED AT FACILITY

Trade Name	Chemical Name*	CAS Number	Maximum Quantity On-Site	Location**
ACUTELY HAZARDOUS MATERIALS				
Aqueous Ammonia (19 to 30% solution)	Ammonium Hydroxide	1336-21-6	10,000 gallons	1
NALCO 356	Cyclohexylamine (20 to 40%) Morpholine (5 to 10%)	108-91-8	2,000 gallons	10
TRIACT 1800	Cyclohexylamine (10 to 20%)	108-91-8	2,000 gallons	8
Ammonia Refrigerant (R717)	Anhydrous Ammonia	7664-41-7	14,000 gallons	2
HAZARDOUS MATERIALS				
Sulfuric Acid	Sulfuric Acid (93%)	7664-93-0	6,000 gallons	4
Aluminum Sulfate	Aluminum Sulfate	10043-01-3	Variable	7
Bleach	Sodium Hypochlorite (10%)	7681-52-9	6,000 gallons	22
Sodium Hydroxide	Sodium Hydroxide (50%)	1310-73-2	6,000 gallons	3
Disodium Phosphate	Di-Sodium Phosphate	7558-79-4	500 pounds	5
Trisodium Phosphate	Tri-Sodium Phosphate	760-54-9	500 pounds	6
Ammonium Bifluoride	Ammonium Bifluoride	N/A	200 pounds	23
Sodium Carbonate	Sodium Carbonate	N/A	500 pounds	24
Hydrochloric Acid	Hydrochloric Acid (30%)	7647-01-0	10,000 gallons	25
Citric Acid	Hydroxy-propoinic-tricarbonxylic Acid	77-7279	500 gallons	26
STABREX ST70	Sodium Hydroxide (1 to 5% solution)	1310-73-9	2,000 gallons	9
NALCO 7280	Polyacrylic Acid (20 to 40% solution) Other Proprietary Chemicals	N/A	250 gallons	11
ELIMIN-OX	Carbohydrazide Amino Compounds	497-18-7	2,000 gallons	12

TABLE 1
VARIOUS CHEMICALS USED AT FACILITY

Trade Name	Chemical Name*	CAS Number	Maximum Quantity On-Site	Location**
NALCO 7408	Sodium Bisulfite (40 to 70% solution)	7631-90-5	250 gallons	13
NALCO 22106	Sodium Plyacrylate Aryl Sulfonate	N/A	2,000 gallons	14
NALCO 7213	Tetrasodium ethylenedia-minetetraace-tate (10 to 20% solution) Sodium Polyacrylate	64-02-8	2,000 gallons	21
Mineral Insulating Oil	Oil	N/A	25,000 to 40,000 gallons	20
Lubrication Oil	Oil	N/A	12,000 gallons	15
Hydraulic Oil	Oil	N/A	600 gallons	27
No. 2 Diesel	Oil	N/A	500 gallons	16
Various Cleaning Detergents	Various	N/A	100 gallons	17
Laboratory Reagents (Liquids and Solids)	Various	N/A	Small Quantities	18/19

* Provides the most toxic chemical used in the solution or formulation.
** The location of these chemicals will be provided prior to start-up of the plant.

3.2 Anhydrous Ammonia

Anhydrous ammonia (Location 2) is used in the facility as a refrigerant (R717) for inlet air chilling. The anhydrous ammonia is stored in a commercially manufactured refrigeration system. This refrigeration system can contain up to 14,000 gallons of anhydrous ammonia. Anhydrous ammonia is used continuously at the facility.

This commercial refrigeration system is equipped with a variety of internal controls and alarms for controlling accidental releases of anhydrous ammonia. The refrigeration system will be located in a building equipped to temporarily contain any ammonia gas releases. This building will be equipped with ammonia gas detectors and alarms to signal any accidental releases of ammonia gas from the refrigeration system.

3.3 Sodium Hydroxide

Sodium hydroxide (Location 3) is used as a demineralizer for resin regeneration and for pH control. Sodium hydroxide is injected into the water system by metering pumps. The concentration of the sodium hydroxide solution is approximately 50 percent. This chemical is used continuously at the facility.

The sodium hydroxide is stored in a lined 6,000 gallon tank. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of the containment area.

The secondary containment system around this tank is about 4 feet high by 16 feet long by 16 feet wide. This area is capable of storing approximately 7,500 gallons or 125 percent of the maximum volume of the tank. The containment system is made of reinforced concrete. This secondary containment system will contain any rainwater buildup. The containment area will be equipped with a manually operated valve located outside of the secondary containment area or the liquid contained in the area may be manually pumped. If a drain is used, the valve will be kept in the closed position. Prior to removal of liquids trapped in the secondary containment system, the basin will be tested with pH paper. If the test is negative, the water will be removed from the secondary system.

3.4 Sulfuric Acid

Sulfuric acid (Location 4) is used for control of scaling in the circulation water and for pH control in the cooling tower water system. The concentration of the sulfuric acid solution is about 93 percent. Sulfuric acid is injected into the water system by metering pumps. This acid is used continuously in the facility.

The sulfuric acid is stored in a lined 6,000 gallon tank. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 4 feet high by-16 feet long by 16 feet wide. This area is capable of storing approximately 7,500 gallons or 125 percent of the maximum volume of the tank. The containment system is made of reinforced concrete and epoxy-lined. The secondary containment area will be equipped with either a drain to remove rainwater buildups or the area will be manually pumped. If a drain is used, a manually operated valve, in the closed position, will be located outside of the secondary containment area. Prior to removal of any liquids in the containment area, the basin will be tested for the presence of acid using litmus paper. If the test is negative, the water will be removed from the secondary system.

3.5 Disodium Phosphate

Disodium phosphate (Location 5) is used for boiler water scale control. A maximum of 500 pounds can be stored at the facility. This product is delivered to the facility in granular solid form. The disodium phosphate is mixed with water to form a slurry and then fed to the boiler water by metering pumps. Disodium phosphate is used continuously at the power plant.

The disodium phosphate is stored in bulk at the chemical storage facility area, until needed at the boiler. This chemical is stored with other similar chemicals that do not react with each other.

The disodium phosphate storage vessel at the boiler is surrounded by physical barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump is equipped with a manually operated drain valve, kept in the closed position, located outside of the barrier/sump system or the sump will be manually pumped. The liquid will be tested prior to removal.

3.6 Trisodium Phosphate

Trisodium phosphate (Location 6) is also used for boiler water scale control. A maximum of 500 pounds can be stored at the facility. This product is delivered to the facility in granular solid form. The trisodium phosphate is mixed with water in a tank to form a slurry. This tank is located near the boiler. Trisodium phosphate is used continuously at the power plant.

The trisodium phosphate is stored in bulk at the chemical storage facility area, until needed at the boiler. This chemical is stored with other similar chemicals that do not react with each other. At the boiler, the trisodium phosphate is mixed with water to the desired concentration and fed into the boiler water by metering pumps.

The trisodium phosphate storage vessel at the boiler is surrounded by physical barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump will be manually pumped or equipped with a manually operated drain valve located outside of the barrier/sump area. The liquid will be tested prior to removal.

3.7 Aluminum Sulfate

Aluminum sulfate (Location 7) is used as a water treatment chemical. Variable amounts of aluminum sulfate can be stored at the facility. This product is delivered to the facility in granular solid form. This product is mixed with water in a tank to form a slurry prior to injection into the water system. Aluminum sulfate is used continuously at the facility.

The aluminum sulfate is stored in bulk at the chemical storage facility area until needed. This chemical is stored with other similar chemicals that do not react with each other. When needed, aluminum sulfate granules are mixed with water to the desired concentration and fed into the water by metering pumps.

The aluminum sulfate storage vessel is surrounded by barriers and/or sumps to control any accidental discharges of this product to the environment. This secondary containment system will contain the maximum concentration of the mixing tank. A valve is located outside of the containment area to remove liquids or the liquids will be manually pumped from the secondary containment area. If a valve is used, it will be kept in the closed position. The contained liquid in the sump will be tested prior to manual pumping or discharging.

3.8 TRIACT 1800

TRIACT 1800 (Location 8) is used for corrosion control of condensate piping in the Heat Recovery Steam Generator. This product contains a 10 to 20 percent concentration of cyclohexylamine, an acutely hazardous material. Approximately 2,000 gallons of TRIACT 1800 is stored at the facility. This product is used continuously at the facility. NALCO 356 can be used as a substitute for TRIACT 1800.

The TRIACT 1800 is stored in a 2,000 gallon tank near the Heat Recovery Steam Generator. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. TRIACT 1800 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of TRIACT 1800 in the tank. The containment system is made of reinforced concrete with an epoxy-liner. This storage system is equipped with a drain to remove accumulated rainwater buildups in the secondary containment system, or the secondary containment area may be pumped. If a drain valve is used, it will be manually operated and located outside of the containment area. It will be kept in the closed position. Prior to draining, the liquid in the secondary containment basin is tested for the presence of cyclohexylamine. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.9 STABREX ST70

STABREX ST70 (Location 9) is used in the cooling water system as a biocide to prevent algae buildup in the cooling water pipes. This product contains sodium hydroxide in a concentration of 1 to 5 percent, and sodium hypobromite in a concentration ranging from 10 to 20 percent. Approximately 2,000 gallons of STABREX ST70 is stored at the facility. This product is used continuously at the facility.

The STABREX ST70 is stored in a 2,000 gallon tank near the cooling water system. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. STABREX ST70 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment system. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is approximately 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of STABREX ST70. The containment system is constructed of reinforced concrete. This secondary containment system will be manually pumped or equipped with a drain to remove rainwater buildups in the secondary containment system. If a drain is used, it will be equipped with a manually operated valve, located outside of the secondary containment system. This valve will be kept in the closed position. Prior to removal of an material in the secondary containment area, it will be tested for the presence of STABREX ST70. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.10 NALCO 356

NALCO 356 (Location 10) is used for corrosion control of condensate piping in the Heat Recovery Steam Generator. This product contains a 20 to 30 percent concentration of cyclohexylamine, an acutely hazardous material. Approximately 2,000 gallons of NALCO 356 is stored at the facility. This product is used continuously at the facility. TRIACT 1800 can be used as a substitute for NALCO 356.

The NALCO 356 is stored in a 2,000 gallon tank near the Heat Recovery Steam Generator. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. NALCO 356 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is doubled walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11-feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of NALCO 356 in the tank. The containment system is constructed of reinforced concrete with an epoxy-liner. This storage system is equipped with a drain to remove accumulated rainwater buildups, or the area will be manually pumped. If used, the drain will equipped with a manually operated valve located outside of the containment area which is kept in the closed position. Prior to removal, the liquid in the secondary containment basin is tested for the presence of cyclohexylamine. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.11 NALCO 7280

NALCO 7280 (Location 11) is used for scale control in the Reverse Osmosis Unit. This product contains a 20 to 40 percent concentration of a polyacrylic acid and other proprietary chemicals. Approximately 250 gallons of NALCO 7280 is stored at the facility. This product is used continuously at the facility.

The NALCO 7280 is stored in a tank at the Reverse Osmosis Unit. This tank is equipped with tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. NALCO 7280 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The NALCO 7280 storage vessel at the Reverse Osmosis Unit is surrounded by barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump will be equipped with a manually operated drain valve outside of the containment area or the area will be manually drained. If a drain is used, the valve will be kept in a closed position. The liquid in the secondary containment area will be tested prior to removal from system.

3.12 ELIMIN-OX

ELIMIN-OX (Location 12) is used as an oxygen scavenger in the process feedwater system to the deaerator. This product contains carbohydrazide, a nonhazardous material. Approximately 2,000 gallons of ELIMIN-OX is stored in a tank at the facility. This product is used continuously at the facility.

The ELIMIN-OX is stored in a tank near the deaerator. This tank is equipped with tank level monitors (e.g., high and low level), alarms, checks valves, and emergency block valves. ELIMIN-OX is injected into the water system by metering pumps. Additionally, the storage tank is equipped with secondary containment.

The ELIMIN-OX storage vessel is surrounded by barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage tank. The sump will be manually drained or equipped with a manually operated drain valve located outside of the containment area. This valve will be kept in a closed position. Liquid in the secondary containment area will be tested prior to discharge or pumping.

3.13 NALCO 7408

NALCO 7408 (Location 13) is used as an oxygen scavenger upstream of the Reverse Osmosis Unit. This product contains a 40 to 70 percent solution of sodium bisulfite. Approximately 250 gallons of NALCO 7408 is stored in a tank at the facility. This product is used continuously as an oxygen scavenger for the Reverse Osmosis Unit.

The NALCO 7408 is stored in a tank at the Reverse Osmosis Unit. This tank is equipped with tank level monitors (e.g., high and low level), alarms, checks valves, and emergency block valves. NALCO 7408 is injected into the water system by metering pumps. Additionally, the storage tank is equipped with secondary containment. Piping from the tank is double-walled at exposed locations outside of containment areas.

The NALCO 7408 storage vessel is surrounded by barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump is equipped with a manually operated drain valve outside of the containment area, or the area will be manually pumped. If a drain valve is used, it will be kept in a closed position until the liquid is tested. Uncontaminated liquid in the secondary containment area will be removed using the drain or by manually pumping the sump.

3.14 NALCO 22106

NALCO 22106 (Location 14) is used as a chelate injected into the suction of the boiler feed pump. This product contains a sodium plyacrylate and an aryl sulfonate solution. Approximately 2,000 gallons of NALCO 22106 is stored in a tank at the facility. This product is used continuously at the facility. NALCO 7213, described below, can be used as a substitute for NALCO 22106.

The NALCO 22106 is stored in a 2,000 gallon tank near the boiler. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors,

alarms, check valves, and emergency block valves. NALCO 22106 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of NALCO 22106 in the tank. The containment system is made of reinforced concrete. This storage system is manually pumped or equipped with a drain to remove accumulated rainwater buildups. A drain will be equipped with a manually operated valve located outside of the containment area. The valve will kept in the closed position. Prior to draining, the liquid in the secondary containment basin will be tested for the presence of chemicals found in NALCO 22106. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.15 Lubricating Oil

Lubricating oils (Location 15) are used for lubricating gas turbines and steam turbine bearings. A maximum of 12,000 gallons can be used or stored at the facility. Most lubricating oils are petroleum hydrocarbon based with high flash points. During normal plant operations, lubricating oils are delivered to the facility in 55-gallon containers and added to the turbines as required. Lubricating oils are used continuously at the power plant.

Some of the lubricating oils are stored at the chemical storage facility area, until needed. These oils are stored with other similar products that do not react with each other. The remaining lubricating oils are contained in the gas and steam turbines for bearing lubrication. These commercial turbines are equipped with a variety of internal controls and alarms for minimizing accidental releases of lubricating oils.

3.16 Number 2 Diesel

No. 2 diesel (Location 16) is used as fuel for the backup fire-pump engine. A maximum of 500 gallons can be stored in the diesel fuel tank of the fire-pump diesel engine. Diesel fuel is a petroleum hydrocarbon with a relatively low flash point. During normal plant operations, diesel fuel is delivered to the facility by tanker truck. Diesel fuel is stored at the facility continuous as a backup fuel for use during emergency operation of the firewater system.

The fire-pump diesel storage tank is a commercially manufactured system. This tank is double-walled to prevent leaks. A sensor and alarm system are located between the tank walls to detect leaks of diesel fuel from the main storage tank area.

3.17 Various Cleaning Chemicals

A variety of cleaning chemicals (Location 17) are used at the facility. Most of these chemicals are used during maintenance and repair of equipment. Approximately 100 gallons can be used or stored at the facility. These cleaning chemicals can be petroleum hydrocarbon or water based. These chemicals can have a range of toxicity and can be flammable with high to low flash points. During normal plant operations, cleaning chemicals are delivered to the facility in 1 to 10 gallon containers. These chemicals are used from their shipping containers or put into cleaning tanks for bulk cleaning of parts and equipment. Cleaning chemicals are used continuously at the power plant.

Some of the cleaning chemicals are stored at the chemical storage facility area until needed. These chemicals are stored with other similar products (hydrocarbon or water based) that do not react with each other. The remaining cleaning chemicals are used in the maintenance shop or at repair locations throughout the facility.

3.18 Various Laboratory Chemicals (Liquids)

A variety of liquid chemicals or reagents (Location 18) are used at the facility. Most of these chemicals are used to perform a chemical test to maintain prescribed levels of water quality at the facility. Most of these chemicals or reagents are used in small quantities, less than one gallon. These chemicals or reagents can have a range of toxicity. These chemicals are delivered to the facility in manufacturers designed containers. Chemicals and reagents are normally used directly from these containers. Chemicals or reagents are used continuously at the power plant.

All of these liquid chemicals are stored in the facility laboratory. These chemicals are stored in specially designed chemical storage lockers with other similar products that do not react with each other. These chemicals are normally used in the laboratory or taken into the field for testing at specific locations.

3.19 Various Laboratory Chemicals (Solids)

Various chemicals or reagents (Location 19) are used at the facility. These chemicals can be in a powder, granular, or bulk form. Most of these chemicals are used to perform a chemical test to maintain prescribed levels of water quality at the facility. Most of these chemicals or reagents are used in small quantities, less than one gallon containers. These chemicals or reagents can have a range of toxicity. The chemicals are delivered to the facility in manufacturer-designed containers or in individual test packets. These chemicals are normally used directly from these containers or packets. Chemicals or reagents are used continuously at the power plant.

All of these solid chemicals are stored in the facility laboratory. These chemicals are stored in specially designed chemical storage lockers with other similar products that do not react with each

other. These chemicals are normally used in the laboratory or taken into the field for testing at specific locations.

3.20 Mineral Insulating Oils

Mineral insulating oils (Location 20) are used in the facility transformers and electrical switch gear. A range of 25,000 to 40,000 gallons can be used in the transformers or switches at the facility. Mineral oils normally have high flash points, because they need to resist ignition from electrical arcing. During filling, mineral insulating oils are delivered to the facility by tanker truck. Old or used mineral oil is also removed from the tanks by tanker truck. Mineral oils are used continuously at facility.
Transformers and electrical switch gear are monitored continuously for upset conditions. Additionally, the area around transformers and switch gear are equipped with secondary containment.

The secondary containment system around the transformers and electrical switch gear can contain up to 110 percent of the largest storage vessel volume in the area. These containment systems are made of reinforced concrete. These secondary containment systems are equipped with a drain to remove accumulated rainwater buildups or the area will be manually pumped. If a drainage system is used, it will be equipped with a manually operated valve located outside of the secondary containment system. The valve will be kept in the closed position. Prior to manual removing the liquid in the containment area, it will examined for oily sheens.

3.21 NALCO 7213

NALCO 7213 (Location 21) is used as a chelate injected into the suction of the boiler feed pump. This product contains a tetrasodium ethylenedia-minetetraace-tate solution of 10 to 20 percent and sodium polyacrylate. Approximately 2,000 gallons of NALCO 7213 is stored at the facility. This product is used continuously at the facility. NALCO 22106 can be used as a substitute for NALCO 7213.

The NALCO 7213 is stored in a 2,000 gallon tank near the boiler. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. NALCO 7213 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of NALCO 7213 in the tank. The containment system is constructed of reinforced concrete. This storage system is equipped with a drain to remove accumulated rainwater buildups. If a drain is not used, the area will be pumped. A drainage system will be equipped with a manually

operated valve outside of the secondary containment system. This drain valve will be kept in the closed position. Prior to removal of liquids in the secondary containment area, they will be tested for the presence of chemicals found in NALCO 7213. If the test is negative, the water will be removed by either draining or manually pumping.

3.22 Sodium Hypochlorite

Sodium hypochlorite (Location 22) is used as a biocide for the condenser cooling water system. The concentration of the sodium hypochlorite solution is approximately 10 percent. Sodium hypochlorite is metered into the water system by metering pumps. This chemical is used continuously in the facility.

The sodium hypochlorite is stored in a 6,000 gallon tank. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 4 feet high by 16 feet long by 16 feet wide. This area is capable of storing approximately 7,500 gallons or 125 percent of the maximum volume of the tank. The containment system is constructed of reinforced concrete. This storage system is equipped with a drain to remove rainwater buildups or the area will be pumped. If the a drain is used, it will be equipped with a manually operated valve located outside of the secondary containment area which is kept in the closed position. Prior to draining, the liquid stored in the secondary containment basin will be tested for the presence of sodium hypochlorite. If the test is negative, the water will be manually drained from the secondary system by either opening the drain valve or manually pumping the area..

3.23 Ammonium Bifluoride

Ammonium bifluoride (Location 23) is used to clean the Heat Recovery Steam Generator. A maximum of 200 pounds can be at the facility during this cleaning operation. This product is delivered to the facility in a solid form. This product is mixed with water to form a slurry prior to the cleaning operation. Ammonium bifluoride is used at the plant every 3 to 5 years for cleaning of the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The ammonium bifluoride is brought directly to the Heat Recovery Steam Generator. The ammonium bifluoride is mixed with water to the desired concentration and fed into the Heat Recovery Steam Generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.24 Sodium Carbonate

Sodium carbonate (Location 24) is used to clean the Heat Recovery Steam Generator. A maximum of 500 pounds can be at the facility during this cleaning operation. This product is delivered to the facility in a solid form. This product is mixed with water at the site to form a slurry prior to the cleaning operation. Sodium carbonate is brought into the plant every 3 to 5 years for cleaning the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The sodium carbonate is brought directly to the Heat Recovery Steam Generator. The sodium carbonate is mixed with water to the desired concentration and fed into the generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.25 Hydrochloric Acid

Hydrochloric acid (Location 25) is used to clean the Heat Recovery Steam Generator. The hydrochloric acid is in a 30 percent solution. A maximum of 10,000 gallons can be at the facility during the generator cleaning operation. This product is delivered to the facility by tanker truck. Hydrochloric acid is brought into the plant every 3 to 5 years for cleaning the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The hydrochloric acid is brought directly to the Heat Recovery Steam Generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.26 Citric Acid

Citric acid (Location 26) is also used to clean the Heat Recovery Steam Generator. A maximum of 500 pounds can be at the facility during this cleaning operation. This product is delivered to the facility in a solid form. This product is mixed with water to form a slurry prior to the cleaning operation. Citric acid is used at the plant every 3 to 5 years for cleaning the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The citric acid is brought directly to the Heat Recovery Steam Generator. The citric acid is mixed with water to the desired concentration and fed into the generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.27 Hydroxy Acetic Acid

Hydroxy acetic acid will be used only during initial cleaning of the heat recovery generator. During operation of the power plant, this chemical will not be used. Therefore, further discussion is not required in this report.

3.28 Formic Acid

Formic acid will be used only during initial cleaning of the heat recovery generator. During operation of the power plant, this chemical will not be used. Therefore, further discussion is not required in this report.

3.29 Hydraulic Oil

Hydraulic oils (Location 27) are used to provide actuating force for steam turbine and combustion turbine (ST and CT) control valves. A maximum of 600 gallons can be used or stored at the facility. Most hydraulic oils are petroleum hydrocarbon based with high flash points. Hydraulic oil is delivered to the facility in 55-gallon containers and added to the ST and CT controls as required. Hydraulic oils are used continuously at the power plant.

Small quantities of hydraulic oils are stored at the chemical storage facility area, until needed. This oil is stored with other similar products that do not react with each other. The remaining hydraulic oil will be contained in the ST and CT control system. These commercial ST and CT controls are equipped with a variety of internal controls and alarms for minimizing accidental releases of hydraulic oil.

3.30 Summary of Chemical Assessment for Potential Pollution of Storm Water

An assessment of potential pollution sources and BMPs for the chemicals used at the plant is provided in **Table 2.** It should be noted that all of these chemical sources are in the main plant area which is paved with concrete or asphalt. Additionally, all of the storm water drains in the main plant discharge all their liquids into the lined evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Aqueous Ammonia Tanks	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Ammonium Hydroxide	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Anhydrous Ammonia Refrigeration Unit	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Anhydrous Ammonia	Commercially designed system. System in special building with alarms to detect leaks. System monitored by control room equipment. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Sodium Hydroxide Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	50% Sodium Hydroxide Solution	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Sulfuric Acid Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	93% Sulfuric Acid	Secondary containment around the tanks and pipes. Lined tank to prevent chemical reaction with acid. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Disodium Phosphate Injection Area	Filling Mixing with water Operation	Overfilling tank Leaks at metering equipment	Di-Sodium Phosphate granules or solution	Sumps around metering area. Small quantities used at one time. Prior to mixing, chemical is in granular solid form. Check and block valves in metering equipment. Metering area in boiler room. Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Trisodium Phosphate	Filling Mixing with water Operation	Overfilling tank Leaks at metering equipment	Tri-Sodium Phosphate granules or solution	Sumps around metering area. Small quantities used at one time. Prior to mixing, chemical is in granular solid form. Check and block valves in metering equipment. Metering area in boiler room. Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Aluminum Sulfate	Filling Mixing with water Operation	Overfilling tank Leaks at metering equipment	Aluminum Sulfate granules and solution	Very low human or environmental toxicity. Small quantities used at one time. Prior to mixing, chemical is in granular solid form. Check and block valves in metering equipment. Metering area in special location near water treatment area. Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
TRIACT 1800 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	10 to 20% Cyclohexylamine	Secondary containment around the tanks and pipes. Tank is located in the Heat Recovery Steam Generator building. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
STABREX ST70 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	1 to 5% Sodium Hydroxide	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
NALCO 356 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	20 to 40% Cyclohexylamine 5 to 10% Morpholine	Secondary containment around the tanks and pipes. Tank is located in the Heat Recovery Steam Generator building. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
NALCO 7280 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	20 to 40% Polyacrylic Acid Other Proprietary Chemicals	Secondary containment around the tanks and pipes. Small quantities used (250 gallons). Tank is located in the Reverse Osmosis area. Manual drain of secondary containment after examination. Check and block valves in metering system. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
ELIMIN-OX Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Carbohydrazide Amino Compounds	Berms or sumps around the tanks and pipes. Very low human and environmental toxicity. Manual drain of secondary containment after examination. Check and block valves in metering system. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
NALCO 7408 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	40 to 70% Sodium Bisulfite	Secondary containment around the tanks and pipes. Small quantities used (250 gallons). Tank is located in the Reverse Osmosis area. Manual drain of secondary containment after examination. Check and block valves in metering system. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
NALCO 22106	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Sodium Plyacrylate Aryl Sulfonate	Secondary containment around the tanks and pipes. Located in boiler room. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Lubricating Oil Storage Tanks	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	High Flash Point Petroleum Hydrocarbon-Based Oil	Secondary containment around the tanks and pipes. Located in turbine buildings. Manual drain of secondary containment after examination. Tank and equipment monitored in control room. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel, HAZMAT teams, and SPCC Plan. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Number 2 Diesel Storage Tank for Backup Fire Pump	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Diesel Oil	Commercially manufactured system. Relatively small quantities used (500 gallons). Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Various Cleaning Chemicals	Maintenance Operations	Spills from containers	Various Hydrocarbon and Water-Based Liquids	Small quantities used at one time (1 to 5 gallons). Used throughout the plant and in maintenance building. Training of maintenance personnel and HAZMAT teams. Storm water drains in plant go to evaporation ponds.
Various Laboratory Chemical (Liquids)	Chemical Analysis	Spills from containers	Various Liquids - Ranging from Organic to Non-Organic Solutions	Very small quantities used at one time (less than a pint). Used in controlled laboratory area. Laboratory technicians trained and HAZMAT teams.
Various Laboratory Chemicals (Solids)	Chemical Analysis	Spills from containers	Various Solids - Ranging from Basic/Acid to Metal-Based Materials	Very small quantities used at one time. Solid form so does not spread. Used in controlled laboratory area. Laboratory technicians trained and HAZMAT teams.
Mineral Insulating Oil Transformers/ Switch Gear	Filling Operation	Overfilling tank Rupture of tank through arcing Leaks from valves	Mineral-Based Oils	Secondary containment around the electrical gear. Specifically manufactured equipment. Manual drain of secondary containment after examination. Electrical equipment operation monitored in control room. Daily inspection by operational personnel. Routine maintenance schedule. Training of operational personnel, HAZMAT teams, and SPCC Plan. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
NALCO 7213	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	10 to 20% Solution of Tetrasodium Ethylenedia-minetetraace-tate and Sodium Polyacrylate	Secondary containment around the tanks and pipes. Located in boiler room. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Sodium Hypochlorite Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	10% Bleach Solution	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Ammonium Bifluoride Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Mixing operations Spills from containers Spills from cleaning equipment	Ammonium Bifluoride	Very low human and environmental toxicity. Used once every 3 to 5 years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Sodium Carbonate Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Mixing Operations Spills from containers Spills from cleaning equipment	Sodium Carbonate	Very low human and environmental toxicity. Used once every 3 to 5 years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Hydrochloric Acid Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Spills from containers Spills from cleaning equipment	30% Hydrochloric Acid	Used once every 3- to 5-years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Citric Acid Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Mixing Operations Spills from containers Spills from cleaning equipment	Citric Acid	Used once every 3- to 5-years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Hydroxy Acetic Acid Cleaning Operation	Initial Cleaning of the Heat Recovery Steam Generator	Spills from containers Spills from cleaning equipment	Hydroxy Acetic Acid	Used only during initial cleaning of the Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Formic Acid Cleaning Operation	Initial Cleaning of the Heat Recovery Steam Generator	Spills from containers Spills from cleaning equipment	Formic Acid	Used only during initial cleaning of the Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Hydraulic Oil	Filling Operation	Overfilling hydraulic reservoirs Rupture of hydraulic lines	High Flash Point Petroleum Hydrocarbon-Based Oil	Commercially manufactured hydraulic system. Relatively small quantities used at specific locations. Hydraulic areas monitored in control room or by operations personnel Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.